



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,015	07/31/2003	Elena Pavlovskaja	018563-002920US	4730
46718 7590 12/17/2009 TOWNSEND AND TOWNSEND AND CREW, LLP (018563) TWO EMBARCADERO CENTER, EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834				
EXAMINER PATEL, YOGESH P				
ART UNIT		PAPER NUMBER		
3732				
MAIL DATE		DELIVERY MODE		
12/17/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/633,015

Applicant(s)

PAVLOVSKAIA ET AL.

Examiner

YOGESH PATEL

Art Unit

3732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/CD)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Allowable Subject Matter

The indicated allowability of claims is withdrawn in view of the newly discovered reference(s) to Chishti et al. (5,975,893) and Liang et al. (6,606,091). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-7, 10-12, 13-17, 21-22, 24-28, 30-31, 37-39 rejected under 35 U.S.C. 103(a) as being unpatentable over Chishti et al. (5,975,893) in view of Liang et al. (6,606,091).

Chishti discloses a method including providing three dimensional image of patient's jaw including teeth, gingiva, and oral tissues (col. 10, lines 66 to col. 12 lines 3) and removing unwanted or unnecessary section of the jaws using eraser tool. Chishti does not explicitly teach defining 3D cutting surface; However, Liang teaches 3D model for masking out undesirable parts of a data set (abstract, last 3 lines). Liang is sufficient for establishing prima facie obviousness because an artisan in the data processing area would have recognized the similar class of problem and the known solutions of the prior

art and it would have been well within the ordinary skill level to implement the system in the different environment. *Id.* At 230, 189 USPQ at 261.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Chishti by providing 3D model for providing extraction of unwanted data (e.g. gum line or other unwanted structures) as taught by Liange in order to obtain a clear tooth structure so that it can be used for aligning or proper tooth occlusion or for designing tooth crowns or positioning trays. Further, it would have been obvious to one of ordinary skill in the art to find a line to separate unwanted structure, such as gum from a desired structure. Further, Chishti discloses cutting the image using B-spline curves lying in the space (col. 11, line 46).

Claims 4-5, 8-9, 23 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chishti in view of Liange as applied to claim 1 above, and further in view of Andreiko et al. (5,431,562).

Chishti/Liange discloses the invention substantially as claimed except for how the cutting surface is being expressed.

Andreiko teaches a spline and parabolic function for curve. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Chishti/Liange by providing a spline and parabolic function as taught by Andreiko in order to obtain a smooth curvature for cutting surfaces. Further, it would have been matter of design choice to use alternative functions such as quadratic function for obtaining desired cutting curve. For example, one of ordinary skill in the art

would recognize to use linear spline, cubic spline, quadratic spline based on intended use. For instance, in linear spline data points are connected by straight lines, and quadratic spline yields curves that are continuous. Further, Liange discloses highlighting a boundary of the region of the interest (col. 9, lines 17-38 and fig. 13A-B).

Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chishti in view of Liange as applied to claim 1 above, and further in view of Ernst (6,402,707). Chishti/Liange discloses the invention substantially as claimed except for a cylindrical coordinate system.

Ernst teaches cylindrical coordinate system (col. 12, lines 41-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Chishti/Liange by providing a cylindrical coordinate system as taught by Ernst for defining reference coordinate system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOGESH PATEL whose telephone number is (571)270-3646. The examiner can normally be reached on 8:00 to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cris Rodriguez can be reached on 571-272-4964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/YOGESH PATEL/
Examiner, Art Unit 3732

/Ralph A. Lewis/
Primary Examiner, Art Unit 3732